Psychosocial predictors and developmental trajectories of tolerance among Swedish adolescents: a longitudinal study

Abstract

Tolerant and intolerant attitudes are a most current subject following the recent global rise in refugees being forced to relocate across the world. The aim of this study is to investigate tolerance and its development over time in adolescents. An important focus is how tolerance, intolerance and intolerant behaviors relate to one another and whether there are different developmental trajectories as well as subgroups. A sample of 1869 adolescents from three Swedish municipalities participated in three measurements, conducted yearly during the years of 2014 to 2016. Results show that adolescents are highly tolerant and girls report more tolerant attitudes than boys. There seem to be different subgroups based on tolerant attitudes and intolerant behaviors. Several psychosocial variables are associated to the different subgroups, though only a few of these variables can predict cluster membership two years later. These findings suggest a complex relationship between tolerant attitudes, intolerant behavior and psychosocial variables.

Keywords: Tolerance, intolerant behavior, adolescents, subgroups, predictors

David Björklund & Anna Dahlberg
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Master’s Programme in Psychology, Örebro university
Supervisor: Katja Boersma
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David Björklund & Anna Dahlberg
Examensarbete, avancerad nivå, 30 hp
Psykologprogrammet, Örebro universitet
Handledare: Katja Boersma
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Introduction

Tolerant attitudes constitute an important aspect in the integration of minorities within modern societies. Intolerant attitudes and behaviors are a most current subject and cause for concern following a recent global rise in refugees being forced to relocate across the world. Since both discrimination and hate-crimes are on the rise in Sweden and many other European countries (Brottstörebyggande rådet, 2016a; European Union Agency for Fundamental Rights, 2016), understanding tolerant and intolerant attitudes better is highly warranted. Previous research suggests that contact opportunities between different groups of people as well as certain personality traits are associated with the development of tolerance (van Zalk, Kerr, van Zalk, & Stattin, 2013; van Zalk & Kerr, 2014). Aside from this, little is known about how tolerant attitudes relate to psychosocial factors. By longitudinally studying developmental trajectories and predictors of tolerant attitudes in a large sample of Swedish adolescents in this thesis, we will expand knowledge on how to promote tolerance and counteract intolerance.

In the Universal Declaration of Human Rights (UDHR) from 1948, the United Nations declared that all human beings are born free and equal in dignity and rights. The United Nations specify that every human should be entitled to all rights and freedoms set forth; “without distinction of any kind, such as race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status” (UN General Assembly, 1948, article 2). The declaration remains most relevant today as migration within Europe has increased over the last years and a multicultural society is now a part of everyday life in most European countries (Malmusi, 2015; Marozzi, 2015; SOU 2012:74). In 2016, approximately every sixth person in Sweden is born abroad (Statistiska Centralbyrån, 2016). The acknowledgement that all humans should be viewed as equal calls for tolerance among us.
Tolerance and related concepts

Tolerance is the ideological belief that people should be treated equally (Miklikowska, 2016). Recent definitions of tolerance include cognitive elements, such as recognizing the real problem of discrimination; evaluative elements, such as the notion that immigrants can fit in and make a positive contribution to society; as well as political elements, such as the willingness to support minorities and welcome immigrants (Côté & Erickson, 2009). All these forms of tolerance are important for the well-being of minorities in both public and social settings (Côté & Erickson, 2009).

Tolerance is considered a key component when it comes to both democracy and counterbalancing prejudice and xenophobia (Lundberg & Abdelzadeh, 2016). Prejudice is considered a concept related to, but not the opposite of tolerance. Prejudice is often defined as a stereotype where an outgroup is the subject of negative emotional evaluation (Hjerm, 2005). Previous research has shown that tolerance and prejudice are related, but ought to be viewed as separate dimensions (van Zalk & Kerr, 2014). Xenophobia is often defined as the irrational dislike, hatred or fear of persons from ethnic groups or cultures different than one’s own (Côté & Erickson, 2009; Dovidio, Hewstone, Glick, & Esses, 2013). It has been hypothesized that high xenophobia and intolerance (e.g. the opposite of tolerance [van Zalk et al., 2013]) go hand in hand, but do not have to co-occur. In other words, it is possible to not experience the irrational fear and still be intolerant (van Zalk et al., 2013).

Implications for society

Research suggests that tolerance has multiple advantages for society: individually, socially and economically (The Living History Forum, 2014). Being exposed to violence, threats and discrimination as an individual, is expensive in terms of human suffering (Nilsson Lundmark & Nilsson, 2013). It is also incompatible with a democratic norm and results in large costs for society (The Living History Forum, 2014). Despite a number of organizations’
persistent work for increased tolerance (e.g. UN, the European council, the Swedish government and schools), legislation and policies against discrimination as well as research addressing the benefits of cultural diversity, there is still prejudice, racism, segregation and discrimination among us (Malmberg, Andersson, & Östh, 2013). More knowledge is needed to understand how interventions more effectively can promote tolerant attitudes within the population.

Sweden is considered a country where the integration policy is inclusive and the general population is considered tolerant (Borgenovi, 2012; Malmusi, 2015). However, over the course of the last few years, there has been an increase in the number of Swedish adolescents who think that immigration is a threat to the Swedish culture (The Living History Forum, 2014).

In 2015, the Swedish National Council for Crime Prevention (Brå) identified the highest level of hate crimes in Sweden so far when 6980 police reports were identified as hate crimes and about 68 percent of these were categorized as having xenophobic motives (Brottsförebyggande rådet, 2016b). The council estimates that the number of unreported cases are many. Among the groups suffering from increased harassment and discrimination are Muslims, Romani and LGBT-people. The harassment and discrimination is not confined to certain areas of society, it is happening everywhere; at home, in school and at work (The Living History Forum, 2014).

Pascoe and Smart Richman (2009) suggest that perceived discrimination seem to be related to mental health issues. Being a victim of ethnic harassment as an immigrant adolescent was found to predict an increased risk in developing poor self-esteem, depression and self-harm (Schloesser Tárano, 2012). It also seems that youth who experience ethnic harassment are more likely to report negative beliefs about academic competence, display
problematic behaviors (e.g. getting into fights) and drop out of school (Bayram Özdemir & Stattin, 2014).

**Tolerance during adolescence**

Adolescence is often described as an important time in the development of social attitudes, and is as such sometimes referred to as “the impressionable years” (Dinas, 2010). It has been argued that social attitudes tend to stabilize during late adolescence (Sears, 1975; Dinas, 2010). An increasing stability during adolescence seems to be applicable to tolerance as well (The Living History Forum, 2014). Lundberg and Abdelzadeh (2016) studied a large sample of Swedish adolescents aged 13-28 and found that tolerant attitudes increased as participants grew older. Girls remain significantly more tolerant than boys throughout life, but on group-level, both boys and girls showed similar trajectories towards increasing tolerance. Tolerance varied the most between age 13 to age 15, followed by a period of increasing stability at ages 18 to 24. Tolerance was the most stable at age 26 to 28. These findings suggest that the development of tolerance is best studied during early to late adolescence.

**The psychological perspective of tolerance**

Research is sparse on psychological factors related to tolerance, especially longitudinal studies focused on predictor variables in the development of tolerance. One hypothesis in trying to understand tolerance from a psychological point of view is the cognitive maturation model. Cognitive functions, such as abstract reasoning, are developed throughout adolescence following the development of areas of the brain like the orbitofrontal cortex (Casey, Jones & Hare, 2008).

Abstract reasoning seems to result in a greater ability to understand the somewhat complex equalitarian principles behind tolerant attitudes (Côté & Erickson, 2009). Abstract reasoning could help explain the general tendencies in decreased prejudicial attitudes during adolescence. Following such fundamental changes, adolescents may simply advance their
ability to dismiss the more flawed reasoning behind prejudiced observations, in favor of the more complex tolerant observations (van Zalk & Kerr, 2014). The development of abstract reasoning during early adolescence is one of the reasons it could pose a window of opportunity for creating interventions targeting tolerance in this specific age group (The Living History Forum, 2014).

Despite a general increase in tolerant attitudes during adolescence, there is individual variation in the development (Côté & Erickson, 2009; Lundberg & Abdelzadeh, 2016). This means that while most adolescents become more tolerant, some do not. Personality traits, such as the psychopathic traits callousness and unemotionality, seem to predict stability in prejudicial attitudes, as well as hinder the development of tolerance (van Zalk & Kerr, 2014). Individuals with these traits rarely challenge their own view of others and tend to remain rigid and inflexible in their attitudes (Barlow & Durand, 2012).

There are also studies indicating that psychological factors, such as self-esteem, might be important in developing tolerance. High self-esteem has been shown to correlate with higher levels of tolerance, while low self-esteem on the other hand has been linked to increased levels of intolerance (The Living History Forum, 2010). Another possibly important psychological factor is impulsivity. Impulsive adolescents who also have intolerant attitudes toward immigrants are shown to be more prone to harass their immigrant peers both verbally and physically (Dodge, Coie & Lynam, 2006). Including several psychological factors such as psychopathic traits, self-esteem and impulsivity could expand knowledge on their relation to tolerance.

Another psychological factor that may be related to tolerant attitudes is negative emotion, but to our knowledge negative emotion has not been studied in this context before. Negative emotion factors such as depression, anxiety and anger could possibly be considered a part of what is often described as an emotional component of tolerance (Côté & Erickson, 2009; Lundberg & Abdelzadeh, 2016).
Using this type of taxonomy, tolerance also consists of a cognitive component (e.g. perceiving individuals different from oneself as a threat) as well as a behavioral part (e.g. harassment and violence). It is unlikely that all individuals who harbor intolerant thoughts express these through violent behavior, but they may still experience associated emotions and cognitions, such as anger or threat. More knowledge is needed on tolerance and how it is related to negative emotions.

**The social perspective of tolerance**

Social norms and interpersonal relations have been found to affect tolerance (Miklikowska, 2016; van Zalk et al., 2013). In Sweden, tolerant attitudes are generally more accepted than intolerant attitudes in both formal and informal social situations, such as in school or during talks with parents (van Zalk et al., 2013). Most adolescents will also accept tolerant reasoning over prejudiced reasoning as it is considered norm (The Living History Forum, 2014). There are, however, multiple theories on how social aspects and tolerant attitudes affect each other.

Developed in 1979 by Tajfel and Turner, social identity theory has become one of the most prominent theories on group and intergroup processes (Hogg & Vaughan, 2011). According to this theory, people develop beliefs of others and themselves in relation to group membership. These beliefs towards others are neutral, positive or negative and affect people’s tendency to interact with outgroup members. Individuals with neutral or positive (i.e. tolerant) attitudes towards people categorized as belonging to outgroups, are likely to take contact with and establish positive relations with outgroup members. On the other hand, it has been argued that people developing negative (i.e. intolerant) beliefs are more likely to either avoid contact or engage in discriminatory behavior with outgroups (Bayram Özdemir, Özdemir, & Stattin, 2016). According to social identity theory, it is plausible to expect that individuals could be categorized into subgroups depending on attitudes and behaviors towards outgroup members.
Intergroup contact seems a key factor in developing tolerance towards various outgroups (Pettigrew & Tropp, 2000; van Zalk & Kerr, 2014). Related to the social identity theory is the contact hypothesis (Allport, 1954), which means that the more contact you have with a member of an outgroup, the less threat you perceive from that group. However, it has also been argued that intergroup contact does not only result in positive outcomes (Côté & Erickson, 2009). The contact needs to be personal, positive, voluntary, as well as reflect equality and comprise shared goals, in order to result in positive outcomes (Dixon & Rosenbaum, 2004; Erickson & Nosanchuk, 1998; Sigelman, Bledsoe, Welch, & Combs, 1996). In support of this hypothesis, research has shown positive links between friendship and tolerance. For example, intergroup friendships have shown to be a predictor of increased tolerance and indirectly decrease prejudice during adolescence (van Zalk & Kerr, 2014).

The importance of social interaction and tolerance could be further studied in a school environment by looking at factors such as classroom climate. Students who feel good about school are more prone to possess positive attitudes than those who do not (The Living History Forum, 2014). In much the same way, students who report a calm and healthy classroom environment are more prone to have positive attitudes than those who report their classroom environment as chaotic (Bayram Özdemir & Stattin, 2014). The school, and more specifically the classroom, could be considered an arena where different groups of adolescents emerge and interact, making the school environment a potential factor related to tolerant attitudes and behaviors.

As discussed previously, there are several theories on why adolescents behave intolerant towards outgroups, and both social behavioral tendencies and school characteristics have been argued to be involved (Bayram Özdemir & Stattin, 2014). These multiple factors point to the importance of studying a wide range of social interaction together with tolerance (van Zalk et al., 2013). Along with social aspects such as the social climate in school, friendship quality
could prove to be an important factor in the development of tolerant attitudes, but more research regarding its effects is needed.

A psychosocial perspective of tolerance

Tolerance has historically mainly been studied from a sociological perspective, but there has been an increase in psychological perspectives over the last few years (The Living History Forum, 2010). The psychological perspective, mentioned above, tends to focus on personality, behavioral, emotional and cognitive factors while the social perspective often focuses on cultural, relational and socio-economic factors. The perspectives are for the most compatible with one another and there is often overlap as few theories are exclusive to one perspective.

The biopsychosocial perspective is a transdisciplinary approach where human aspects such as tolerance can be viewed as complex and variable interactions between many different factors (Barlow & Durand, 2012). In this study, the biological perspective is not assessed. In Figure 1, the various psychosocial factors used in this study are shown. The factors used in this study and depicted in the model are based on research and theories presented in the introduction. Psychological factors are placed to the left and social factors to the right. It is our hope that a psychosocial perspective of tolerance in a longitudinal setting will be able to provide a broad picture of tolerance among adolescents.
Figure 1

Overview of psychosocial factors used in the study that might interact with the development of tolerant attitudes.

Gender differences in tolerance

Significant differences in tolerance between the genders have been observed, but little is known about different subgroups for the genders regarding developmental patterns and trajectories. Girls tend to be more tolerant than boys, regardless of age (The Living History Forum, 2014). There are several plausible explanations for these differences and one of them concerns gender roles. Traditionally, women have been described to value interpersonal relations higher than men (Côté & Erickson, 2009). Women have also been expected to act more caring and nurturing than men, both at home and at work.

In other words, norms regarding women’s gender role seem more in line with the core of tolerance, for example positive attitudes towards immigrants, than the gender role of men. Studying tolerance further between the genders may provide insight into similarities and differences in predictor factors and developmental trajectories.

Intolerance and violence

Intolerant behavior can be linked to harmful effects (Ombudsmannen mot etnisk diskriminering, 2007). There is an argument to be made for distinguishing between
adolescents who have intolerant attitudes, and adolescents who have intolerant attitudes but also convert these attitudes into behavior. Most adolescents, despite degree of tolerance, do not commit violent acts (Brottsförebyggande rådet, 2016a). Previous research also indicates that a large percentage of all violent crimes are carried out by a small group of people (Brottsförebyggande rådet, 2014). These violent adolescents have been argued to be biased in their interpretations of both social situations and other people's intentions (Dodge et al., 2006), however, little is still known about links between tolerance and being the victim and/or the perpetrator of violence.

Identifying and understanding this group of individuals, who are more prone to partake in violent behavior and possibly hate crimes, could provide information that may help reduce suffering on an individual, group-wise and societal level.

In summary, previous findings suggest that adolescents tend to follow similar trajectories when developing tolerance (Lundberg & Abdelzadeh, 2016). There are many psychological and social factors theorized to be associated with tolerance, for example psychopathic traits, self-esteem and friendship quality. Research has yet to provide knowledge on whether there are different subgroups and if these groups follow different developmental trajectories. Specifically, it is important to study tolerant attitudes in relation to violent behaviors. Being able to study multiple psychological and social factors within a longitudinal research design is most likely an advantage as identifying factors related to tolerance could be part of the progression towards more knowledge regarding selection, shaping and evaluation of interventions aimed at counteracting intolerance and promoting tolerance among adolescents.

Aim and research questions

The aim of this study is to investigate tolerance and its development over time in adolescents. An important focus is how tolerance, intolerance and intolerant behaviors relate to one
another and whether there are different developmental trajectories. Another focus is to investigate subgroups of intolerance and intolerant behaviors and how these may relate to psychosocial factors. In concord with previous findings, we plan to study gender as a factor of tolerance. The aim can be summarized and divided into four research questions:

1. How tolerant are Swedish adolescents and are there subgroups with different profiles of tolerant attitudes and behaviors?
2. What different developmental trajectories of tolerance can be identified across a two year period?
3. How do psychosocial variables relate to subgroups of tolerance?
4. Are there predictor variables for different subgroups of tolerance across a two year period?

Research design

Participants

More than three thousand Swedish high school students from grade 7 to 9 (age 13 - 15 years) from 17 public schools in three Swedish municipalities were invited to participate. The study is part of a larger project referred to as the Three City Study, which is expected to run annually for five years, from 2014 to 2018. Currently three data collections have been completed. The three measurements used in this study are referred to as T1, T2 and T3.

To participate, adolescents had to give their active consent, while caregivers gave their passive consent. All parents received written information about the study by letter. In total, 122 parents refused their adolescent’s participation. The inclusion criteria for this study were that adolescents had participated in all measurements (T1, T2, and T3) with complete data on target variables described under measurements.

Figure 2 displays a flowchart of the participants. At T1, a sample of 2768 adolescents participated with 47.7 % of the sample being girls. A sample of 2503 adolescents participated
at T2 with 47.7% of the sample being girls. Of the 2768 adolescents participating at T1, 1869 of these adolescents also participated at T3, with 46.5% of the sample being girls.

In total 32% of the participants dropped out of the study. As compared to the sample, there was a significantly higher degree of adolescents with immigrant background (at least one parent born outside of Scandinavia) in the drop-out group, $\chi^2 (1) = 37.98$, $p < .001$. On other variables, the groups did not differ significantly. Another 25 participants with varying answers on gender were excluded. In the remaining sample, missing data was imputed (see data analysis).

![Flowchart of participants displayed in total and divided by gender, from measurement T1 to measurement T3.](image)

**Figure 2**

Flowchart of participants displayed in total and divided by gender, from measurement T1 to measurement T3.

**Design**

The adolescents completed the questionnaires in their classroom during regular school hours. The teacher was asked to leave the classroom during the measurement to ensure confidentiality. Trained test leaders informed the adolescents about confidentiality and told
them that it was voluntary to participate. The test leaders also helped students when necessary, for example by explaining questions that were difficult to understand. When the questionnaires were completed test leaders collected them. The adolescents had 90 minutes to answer the questions that were divided into two separate questionnaires. The order of administration was randomized. After completing the first questionnaire, the participants were offered a short break and a snack. During the break the participants were not allowed to talk to each other, limiting the possible influence of peers. The class received 300 SEK (~35 USD) at each measurement as thanks for participating. The Regional Ethics Review Board in Sweden approved the study procedure.

**Measurements**

**Demographic factors**

Questions considering gender, age, immigrant background, and name of school were asked for. If the adolescent was born outside Sweden and/or either one or both the parents were born outside Scandinavia they were categorized as having an immigrant background in this study (Kulturdepartementet, 2000).

**Tolerance**

The self-report questionnaire *Tolerance and Prejudice Scales* (TPS) was used to measure tolerance and prejudice in adolescents. TPS consists of five items concerning tolerance (e.g. “I treat everyone equally, even if they are different from me”) and three items about prejudice (e.g. “If immigrant youths would sit down next to me on the bus, I would move to another seat, because they can be dangerous”) that are answered on a five-point Likert-scale from 1 (don’t agree at all) to 5 (agree totally). Cronbach’s alpha for tolerance ranged between acceptable and good for the three measurements (.77 - .81), but was found unacceptable for prejudice (.39). Validity has been previously supported (van Zalk et al., 2013). The items regarding prejudice was not deemed reliable and was removed between T1 and T2. Prejudice
was therefore excluded as a variable in this study altogether. For all questions regarding
tolerance and prejudice, see Appendix 1. Scores for tolerance and all other scales were
converted in to means with higher scores signifying higher levels of the variable.

Street violence

Being a victim of street violence was assessed using a questionnaire adapted from Andershed,
Stattin and Kerr (2001) and was measured in four items (e.g. “Have you been attacked by
others without reason in your spare time during the last six months?”) on a four-point Likert-
scale. Answers ranged from 1 (No, it has not happened) to 4 (Yes, it has happened 4 or more
times). The reliability ranged between good and excellent, Cronbach’s α = .80 - .91. Being a
perpetrator in street violence was assessed separately but using the same adapted
questionnaire in four different items (e.g. “Have you taken part in attacking others without
them having attacked you or your friends first?”), on the same Likert-scale. The reliability
ranged between good and excellent for the three measurements, Cronbach’s α = .81 - .91. For
all questions regarding street violence, see Appendix 1.

Psychological factors

Failure expectations. Failure expectations were assessed using an adapted questionnaire from
Nurmi (1993). The questionnaire consisted of six items (e.g. “I don’t really have faith in my
ability to cope with hard tasks”) answered on a four-point Likert-scale from 1 (Not true at all)
to 4 (True). The reliability ranged from acceptable to good for the three measurements,
Cronbach’s α between .74 and .80 with validity of the scale previously supported (Nurmi,
1993).

Self-esteem. Self-esteem was measured at T1 using Rosenberg’s Self Esteem Scale
(RSES) in 10 items (e.g. “On the whole, you are satisfied with yourself”) answered on a 4-
point Likert-scale. Answers ranged from 1 (Not true at all) to 4 (True). The reliability was
good for the three measurements, Cronbach’s $\alpha = .88$, with validity of the scale previously supported (Crandal, 1973).

**Psychopathic traits.** Psychopathic traits (callousness, unemotionality and remorselessness) was measured using Youth Psychopathic Traits Inventory in a total of 15 items (e.g. “Being nervous and worried is a sign of weakness”) answered on a 4-point Likert-scale. Answers ranged from 1 (Don’t agree at all) to 4 (Agree completely). The reliability for subscales remorselessness and callousness was acceptable for the three measurements, Cronbach’s $\alpha = .73-.76$ and Cronbach’s $\alpha = .70-.72$ respectively. The reliability for subscale unemotionality was unacceptable, Cronbach’s $\alpha = .42$. Validity for the scale has been previously supported (Andershed, Kerr, Stattin & Levander, 2002).

**Impulsivity.** Impulsivity was measured using the urgency subscale from UPPS Impulsive Behavior Scale (UPPS). The scale contains eleven items (e.g. “Sometimes I do things on impulse that I later regret”) that are answered on a four-point Likert-scale from 1 (Don’t agree at all) to 4 (Agree completely). Reliability was good for the three measurements (Cronbach’s alpha between .86-.88) with validity of the scale previously supported (Whiteside & Lynam, 2001).

**Negative emotions**

**Anxiety.** In order to measure anxiety, the Overall Anxiety Severity and Impairment Scale, OASIS was used. Since the scale was originally developed for adult populations, the wording been slightly adapted to fit adolescents. OASIS consists of five items (e.g. “In the past week, how often have you felt anxiety, been really nervous or fearful during the last week?”) and is answered on a five point Likert-scale from 1 (Not at all) to 5 (All the time). The reliability was good for the three measurements, Cronbach’s $\alpha = .86-.88$, with validity of the scale previously supported (Norman, Cissell & Means-Christensen, 2006).
Anger. Anger was measured at T1 using AOASIS, an adapted version of OASIS where questions on fear/anxiety is replaced by the emotion anger. AOASIS contains five items (e.g. “In the past week, how often have you felt angry?”) and is answered on a five point Likert-scale from 1 (Not at all) to 5 (All the time). The reliability was good for the three measurements, Cronbach’s $\alpha = .84$. As the measure was created for the purpose of this study, no information on validity was available.

Depressive symptoms. Depressive symptoms during the past week was measured using the Epidemiological Studies Depression Scale for Children (CESD-C) where 20 items (e.g. I didn’t sleep as well as I usually sleep” and “I felt down and unhappy”) were answered on a 4-point Likert-scale from 1 (Not at all) to 4 (Often). The reliability was excellent for the three measurements, Cronbach’s $\alpha = .91 - .95$, with validity of the scale previously supported (Olsson, von Knorring, 1997).

Social factors

Friendship quality. Friendship quality was measured using a questionnaire adapted and validated by Kerr, Stattin & Kiesner (2007). It was measured for a maximum of three friends in six items (e.g. “Do the person support you when you have argued with your parents/teacher?”) for each friend. Items used a 5-point Likert-scale and answers ranged from 1 (Don’t agree at all) to 5 (Agree completely). The reliability ranged between questionable and acceptable for the three measurements, Cronbach’s $\alpha = .68 - .77$.

Classroom climate. School-class climate was measured using four items created for this study (e.g. “We are nice to each other”) on a 5-point Likert-scale. Answers ranged from 1 (Agree totally) to 5 (Don’t agree at all). The reliability was good for the three measurements, Cronbach’s $\alpha = .81 - .83$, but validity has not been confirmed.
Ethical considerations

All participants in the study were adolescents between 13 and 16 years old, which poses some dilemmas. Studies like this one always involve some form of imbalance in power between participants and test leaders; further so when the participant is significantly younger than the test leader. This type of imbalance could lead to adolescents feeling partly or fully forced into participation, especially as it occurs in a context of otherwise mandatory participation, i.e. in school. By clearly and neutrally explaining how participation always is voluntarily and that the adolescents may withdraw from the study at any time, without needing to give any reason for it, we hope to have counteracted this somewhat.

Aside from adolescents having to give active consent for participation, their caregiver’s had to give passive consent. Passive consent was used for two reasons, it can increase the sample size (Pokorny, Jason, Schoeny, Townsend, & Curie, 2001), and has also been found to limit sampling bias (Shaw, Cross, Thomas, & Zubrick, 2015). A problem with this approach is that we have no idea of knowing if some of the caregivers, for various reasons, did not receive information about their child’s participation in the study.

It is also important to realize that the type of questions answered by the adolescents in this study have certain political weight, and could be perceived as delicate. The answers provided by the adolescents could potentially be used as ground for future political and health-related interventions. The adolescents were informed about this upon participating in the study, but it puts another layer of responsibility upon researchers handling the data, so that it is not misused or overly subject to misinterpretation.

Data analysis

For participants in the study, less than 5% of the data were missing in each wave. Assuming that the non-planned missing data was not missing at random, a modern, two-step method of replacing the data was used, in order to avoid the bias introduced by dropping observation or
using older forms of data replacement (Enders, 2010). Following Kärnä et al (2011), the quark function in R\(^1\) (Lang, Curtis, & Bontempo, 2016) was used to create principal components that were subsequently used as auxiliary variables in the mice function\(^2\) (multivariate imputation with chained equations) of R (Howard, Rhemtulla, & Little, 2015) to impute 100 datasets. The average or modal imputed value was then calculated to replace each missing data point in the original dataset. These values represent the “best population estimate of the value needed to reproduce the population parameters” (Kärnä et al., 2011, p. 55).

The sample was normally distributed with a slight skewness to the right (towards tolerance). For girls, skewness was 0.53 (SE = 0.08) and kurtosis was 0.64 (SE = 0.17). For boys, skewness was 0.37 (SE = 0.08) and kurtosis 0.19 (SE = 0.16).

Analyses of variance (ANOVA) were performed to test for significant differences in tolerance between measurements among both genders.

Chi-square tests were used to test for differences within the sample for gender. Chi-square tests were also used to compare the sample and excluded participants based on gender as well as immigrant background. Independent t-tests were performed to compare scores on tolerance between the sample and excluded participants.

Hierarchical clustering with Ward’s method was initially used on the clustering variables tolerance, victim of violence and perpetrator of violence, for its conservative form of separating individuals into different clusters based on multiple variables (Gordon, 1999). Cluster centers of solutions explaining at least 67% of the error sums of squares were chosen as starting points of a K-means clustering. K-means clustering allows individuals to be sorted under a different subgroup in the cluster solution, if this results in improved ESS. Analysis of

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\(^1\) The quark function in R applies the Principal Component Auxiliary Variable method, developed by Howard, Rhemtulla, and Little (2015), to extract auxiliary variables from large datasets to use in missing data treatment. Functionally, it takes the original data matrix and imputes the missing data to produce a new data matrix. In the new data matrix, products and cross-products of all variables are calculated and then submitted to a principal component analysis, from which ten linear and three non-linear components are extracted. These components can then be used as auxiliary variables in multiple imputation procedures.

\(^2\) Using the mice function in R (standing for multivariate imputation with chained equations), 100 data sets are imputed, using auxiliary variables. Following imputation, the 100 data sets are collapsed, taking the individual grand mean or grand mode (depending on the measurement level) to replace the missing data.
variance (ANOVA) was then performed to test for differences between clusters.

Developmental trajectories were statistically analyzed at each time point through cross-tabulation of the clusters and their relationship to each other. Trajectories were then described statistically using exact cell-wise analysis to obtain an odds ratio (OR) for movement between each cluster from T1 to T2 and from T2 to T3. For these pattern-oriented analyses the exacon analysis in the statistical package SLEIPNER was used (Bergman & El-Khouri, 2002).

To investigate whether psychosocial variables are related to the five different clusters, analyses of variance (ANOVA) was run using data from T1. Due to unequal variances within the clusters, Games-Howell post hoc test were used (Field, 2009). Differences in scores on variables between the clusters were mapped out using superscripted lettering.

To discover possible predictors for certain cluster membership at T3 among the psychosocial variables, multinomial regression analysis was used.

Results

Description of the sample
The sample consisted of 1869 participants out of which 48% were girls. Reported mean scores and standard deviations for our clustering factors, tolerance and violent behavior, as well as reported scores for psychological-, emotional- and social factors are presented below in Table 1. As can be seen in Table 1, tolerance at T1 within the population of Swedish adolescents was markedly above the scale midpoint (M = 3.85, SD = 0.81). Exemplified, this means that the adolescents, on average, either agree or agree completely with statements such as: “I treat everyone equal, even if they are different from me”.

There are significant gender differences considering the cluster variables, so results are discussed separately for girls and boys. Girls are more tolerant than boys, while boys are more exposed to violence as a victim and perpetrator.
Table 1

Descriptive statistics at T1 for the sample. All variables range 1-5, where higher score signify higher levels.

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Girls</th>
<th>Boys</th>
<th>t / χ²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clustering variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tolerance</td>
<td>3.85 (0.81)</td>
<td>4.03 (0.72)</td>
<td>3.70 (0.85)</td>
<td>9.13*</td>
</tr>
<tr>
<td>Victim</td>
<td>1.06 (0.24)</td>
<td>1.04 (0.18)</td>
<td>1.07 (0.29)</td>
<td>-3.21*</td>
</tr>
<tr>
<td>Perpetrator</td>
<td>1.07 (0.32)</td>
<td>1.04 (0.26)</td>
<td>1.10 (0.37)</td>
<td>-3.63*</td>
</tr>
<tr>
<td><strong>Psychological factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impulsivity</td>
<td>1.87 (0.59)</td>
<td>1.93 (0.60)</td>
<td>1.83 (0.57)</td>
<td>3.84*</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>3.13 (0.60)</td>
<td>2.95 (0.63)</td>
<td>3.29 (0.53)</td>
<td>-12.43*</td>
</tr>
<tr>
<td>Failure expectation</td>
<td>2.13 (0.56)</td>
<td>2.27 (0.57)</td>
<td>2.00 (0.53)</td>
<td>10.35*</td>
</tr>
<tr>
<td>Psychopathic traits</td>
<td>1.78 (0.50)</td>
<td>1.69 (0.43)</td>
<td>1.85 (0.54)</td>
<td>-7.30*</td>
</tr>
<tr>
<td><strong>Negative emotions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>1.79 (0.71)</td>
<td>2.05 (0.81)</td>
<td>1.57 (0.52)</td>
<td>15.22*</td>
</tr>
<tr>
<td>Anxiety</td>
<td>1.57 (0.68)</td>
<td>1.79 (0.75)</td>
<td>1.39 (0.55)</td>
<td>12.79*</td>
</tr>
<tr>
<td>Anger</td>
<td>1.64 (0.65)</td>
<td>1.76 (0.70)</td>
<td>1.54 (0.58)</td>
<td>7.08*</td>
</tr>
<tr>
<td><strong>Social factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friendship quality</td>
<td>4.17 (0.58)</td>
<td>4.36 (0.50)</td>
<td>4.00 (0.59)</td>
<td>14.21*</td>
</tr>
<tr>
<td>Classroom climate</td>
<td>3.78 (0.83)</td>
<td>3.68 (0.85)</td>
<td>3.86 (0.80)</td>
<td>-4.57*</td>
</tr>
</tbody>
</table>

Note: *p<.001

Research question 1: How tolerant are Swedish adolescents and are there subgroups with different profiles of intolerant attitudes and behaviors?

Figure 3 displays five different clusters or subgroups that could be distinguished based on the clustering procedure on the three variables, tolerance, victim of violence and perpetrator of violence in girls. These five clusters were able to explain at least 84% of the error variance in tolerance and violent behavior at T1, 82% at T2 and 88% at T3 respectively. The five emergent groups were named as follows; the first cluster: “Tolerant” consists of girls with relatively high reported scores on tolerance and low reported scores on violent behavior. The second cluster “Average tolerance” consists of girls with relatively average reported scores on tolerance and low reported scores on violent behavior. The third cluster “Intolerant” consists of girls with relatively low reported scores on tolerance and low reported scores on violent behavior. The fourth cluster “Average tolerance, victim” consists of girls with relatively average reported scores on tolerance and high reported scores on being a victim of
violence, but not perpetrators. The fifth cluster “Intolerant, violent” consists of girls with relatively low reported scores on tolerance and high reported scores on violent behavior.

<table>
<thead>
<tr>
<th>Cluster 1: Tolerant</th>
<th>Cluster 2: Average tolerance</th>
<th>Cluster 3: Intolerant</th>
<th>Cluster 4: Average tolerance, victim</th>
<th>Cluster 5: Intolerant, violent</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 439 (50%)</td>
<td>N = 309 (36%)</td>
<td>N = 79 (9%)</td>
<td>N = 29 (3%)</td>
<td>N = 14 (2%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Tolerance</th>
<th>Average tolerance</th>
<th>Intolerant</th>
<th>Average tolerance, victim</th>
<th>Intolerant, violent</th>
</tr>
</thead>
<tbody>
<tr>
<td>m (SD)</td>
<td>4.58 (0.31)</td>
<td>3.71 (0.28)</td>
<td>2.59 (0.39)</td>
<td>3.63 (0.47)</td>
<td>2.79 (1.14)</td>
</tr>
<tr>
<td>Tolerance</td>
<td>1.00 (0.03)</td>
<td>1.00 (0.00)</td>
<td>1.00 (0.03)</td>
<td>1.45 (0.29)</td>
<td>2.20 (0.33)</td>
</tr>
<tr>
<td>Victim</td>
<td>1.00 (0.02)</td>
<td>1.02 (0.10)</td>
<td>1.02 (0.09)</td>
<td>1.06 (0.11)</td>
<td>2.98 (0.44)</td>
</tr>
<tr>
<td>Perpetrator</td>
<td>1.00 (0.03)</td>
<td>1.00 (0.00)</td>
<td>1.00 (0.03)</td>
<td>1.45 (0.29)</td>
<td>2.20 (0.33)</td>
</tr>
</tbody>
</table>

**Figure 3**

*Z-score levels for tolerance, victim of violence as well as perpetrator of violence for girls in the five different clusters. The attached table shows mean scores and standard deviations of cluster variables.*

In summary, more than 85% of the girls reported themselves as tolerant and 9% of the girls reported themselves as intolerant. Neither of these groups reported any violent behavior. A small group consisting of 3% of the girls reported themselves as tolerant but being victims of violence and an even smaller group consisting of 2% of the girls reported themselves as intolerant and both victim and perpetrators of violent behavior. Girls increased in tolerance between the measurements T1 (M = 4.03, SD = 0.72) and T2 (M = 4.25, SD = 0.64), F (869) = 14.40, p < 0.001, and between T2 and T3 (M = 4.37, SD = 0.65), F (869) = 13.04, p < 0.001.
As seen in Figure 4, five different clusters or subgroups can be distinguished based on K-means clustering of the three variables: tolerance, victim of violence and perpetrator of violence in boys. These five clusters were able to explain 81% of all variance in tolerance and violent behavior for boys at T1, 81% at T2 and 85% at T3 respectively.

The five emergent groups were separated and named as follows; the first cluster: “Tolerant” consists of boys with high reported scores on tolerance and low reported scores on violent behavior. The second cluster “Average tolerance” consists of boys with average reported scores on tolerance and low reported scores on violent behavior. The third cluster “Intolerant” consists of boys with low reported scores on tolerance and low reported scores on violent behavior. The fourth cluster “Average tolerance, violent” consists of boys with average reported scores on tolerance and high reported scores on violent behavior. The fifth cluster “Intolerant, violent” consists of boys with low reported scores on tolerance and high reported scores on violent behavior.

Overall, 75% of the boys reported themselves as tolerant and 19% of the boys reported themselves as intolerant. Neither of these groups reported any violent behavior. A small group consisting of 3% of the boys reported themselves as tolerant but violent, and another small group consisting of 3% of the boys reported themselves as intolerant and both victims and perpetrators of violence. Boys increased in tolerance between the measurements T1 (M = 3.70, SD = 0.85) and T2 (M = 3.91, SD = 0.80), F (998) = 13.73, p < 0.001, and between T2 and T3 (M = 3.99, SD = 0.84), F (998) = 14.12, p < 0.001.
PREDICTORS AND TRAJECTORIES OF TOLERANCE

Figure 4

Z-score levels for tolerance, victim of violence as well as perpetrator of violence for boys in the five different clusters. The attached table shows mean scores and standard deviations of cluster variables.

Summarized, the large majority of the sample reports a high degree of tolerance, but there are identifiable subgroups based on intolerant attitudes and behaviors. Girls reported a higher degree of tolerance than boys, $X^2 (2, N = 1869) = 41.49, p < .001$. Tolerance also increased between the measurements for both genders.

Research question 2: What different developmental trajectories of tolerance can be identified?

Figure 5 shows clusters at the three time points for girls and the patterns of change or stability. The arrows represent typical developmental trajectories proved to be significant. A typical trajectory is one where occurrence is higher than what is expected by chance. According to the analysis, the typical trajectory between the time points is one of stability,
making it likely that girls remain in the same cluster over time. The greatest likelihood of stability is found for the cluster “average tolerance and victim”, indicating that girls in this group have a twelve times higher likelihood of remaining average tolerant and a victim of violence, than what can be expected by chance.

Worth noting is that girls in the intolerant cluster are more than five times as likely to move to the intolerant and violent cluster from T1 to T2. Likewise, girls in the cluster categorized as “average tolerance and victim” at T1 are almost three times more likely to belong to the intolerant cluster at T2. Except from showing a stability of cluster membership over time, these results indicate that girls with intolerant attitudes are at risk to engage in violent behavior one year later. Also, girls who report being victims of violence are likely to become intolerant during the following year.
Developmental trajectories for girls in the different clusters. The number at each arrow shows how many more times than expected by chance people moved to similar, or dissimilar, groups across time.
Figure 6 shows clusters at the three time points for boys. As can be seen, the typical trajectories for the boys are the ones of stability. The greatest likelihood of stability is observed in the cluster labeled average tolerance and violent, where boys are over 14 times more likely to remain in this cluster one year later. Looking at changes over time, boys who are intolerant are almost two times more likely to become violent between T2 and T3. Another typical trajectory is becoming less intolerant and less violent at both T1 to T2 and T2 to T3. In other words, boys are between nearly four and over five times more likely to go from being intolerant and violent (cluster 5) to becoming averagely tolerant and violent (cluster 4).

In summary, these results indicate that apart from stability of clusters over time for both girls and boys, there are some significant changes too. Among girls, those who are victims of violence tend to become less tolerant. Girls who are intolerant tend to engage in violent behavior one year later. The same typical trajectory is found for boys who are intolerant. Also, boys who report intolerant attitudes and violent behavior tend to become more tolerant and less violent.
Developmental trajectories for boys in the different clusters. The number at each arrow shows how many more times than expected by chance people moved to similar, or dissimilar, groups across time.

*Figure 6*
Research question 3: How do psychosocial variables relate to any subgroups of tolerance?

Table 2 displays average values on the psychological and social variables for girls. The analysis of variance showed significant differences between all the variables and the clusters, indicating that variables are related to the subgroups.

The Games-Howell post hoc test revealed some significant associations between the variables and the clusters for girls. The different superscript letters in the table represent significant post hoc test differences. When looking at the psychological variables, girls in the victimized or violent subgroup score significantly higher on impulsivity than the tolerant group. For girls, all clusters have a significantly higher level of psychopathic traits, compared to the tolerant cluster, and participants in the intolerant/violent cluster score significantly higher than all other clusters on this scale.

Negative emotion variables anger, depression and anxiety are significantly higher for girls in the average tolerance/victim cluster compared to girls in all other clusters. When looking at variables implying social interaction, friendship quality is significantly higher in the tolerant cluster compared to clusters 2, 3 and 4, but not compared to the intolerant/violent cluster.

Table 2

The relationship between clusters and psychosocial variables for girls. Different letters in superscript indicate significant differences between clusters.

<table>
<thead>
<tr>
<th>m (SD)</th>
<th>Cluster 1</th>
<th>Cluster 2</th>
<th>Cluster 3</th>
<th>Cluster 4</th>
<th>Cluster 5</th>
<th>F-value / (\chi^2) (df = 4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological factors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impulsivity</td>
<td>1.84 (0.56)*</td>
<td>1.94 (0.54)*</td>
<td>2.00 (0.64)*</td>
<td>2.65 (0.67)*</td>
<td>2.66 (0.95)*</td>
<td>20.11*</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>3.03 (0.64)</td>
<td>2.90 (0.60)</td>
<td>2.83 (0.59)*</td>
<td>2.47 (0.61)*</td>
<td>3.23 (0.32)*</td>
<td>8.08*</td>
</tr>
<tr>
<td>Failure exp.</td>
<td>2.18 (0.59)*</td>
<td>2.33 (0.53)*</td>
<td>2.35 (0.45)*</td>
<td>2.49 (0.63)*</td>
<td>2.79 (0.88)*</td>
<td>8.19*</td>
</tr>
<tr>
<td>Psychop. traits</td>
<td>1.61 (0.39)*</td>
<td>1.72 (0.35)*</td>
<td>1.75 (0.39)*</td>
<td>1.88 (0.48)*</td>
<td>2.82 (1.04)*</td>
<td>35.11*</td>
</tr>
<tr>
<td>Neg. emotion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>1.96 (0.78)*</td>
<td>2.10 (0.75)*</td>
<td>2.16 (0.91)*</td>
<td>2.86 (1.03)*</td>
<td>1.84 (0.61)*</td>
<td>10.18*</td>
</tr>
<tr>
<td>Anxiety</td>
<td>1.69 (0.72)*</td>
<td>1.82 (0.71)*</td>
<td>1.91 (0.77)*</td>
<td>2.63 (1.01)*</td>
<td>1.46 (0.50)*</td>
<td>12.83*</td>
</tr>
<tr>
<td>Anger</td>
<td>1.68 (0.65)*</td>
<td>1.77 (0.69)*</td>
<td>1.90 (0.80)*</td>
<td>2.57 (0.80)*</td>
<td>1.46 (0.40)*</td>
<td>13.15*</td>
</tr>
<tr>
<td>Social factors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The results in table 3 shows average values on the psychological and social variables for boys. Significant differences were found between all the variables and the clusters. Post hoc analysis revealed some significant associations between the variables and the clusters for boys. The different superscript letters represent significant post hoc test differences.

Boys in the intolerant/violent subgroup scores significantly higher on the impulsivity scale, compared to all other groups. The same results are obtained for the questionnaire measuring psychopathic traits, were intolerant/violent cluster report significantly higher scores than all the other clusters, also the average tolerance/violent cluster score significantly higher than the tolerant and the intolerant clusters, but not the average tolerance cluster without violent behavior. Boys in the intolerant/violent cluster also report a higher level of failure expectations than the other clusters, while boys in the tolerant cluster tend to have a higher self-esteem than boys in other clusters.

Table 3

The relationship between clusters and psychosocial variables for boys. Different letters in superscript indicate significant differences between clusters.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Cluster 1 Tolerant</th>
<th>Cluster 2 Average tolerance</th>
<th>Cluster 3 Intolerant</th>
<th>Cluster 4 Average tolerance, violent</th>
<th>Cluster 5 Intolerant, violent</th>
<th>F-value / $\chi^2$ (df = 4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impulsivity</td>
<td>1.68 (0.50)$^a$</td>
<td>1.91 (0.53)$^b$</td>
<td>1.84 (0.50)$^c$</td>
<td>2.04 (0.76)$^{ab}$</td>
<td>2.76 (0.87)$^d$</td>
<td>36.44*</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>3.45 (0.48)$^a$</td>
<td>3.21 (0.51)$^b$</td>
<td>3.09 (0.52)$^c$</td>
<td>3.15 (0.56)$^d$</td>
<td>3.11 (0.64)$^e$</td>
<td>22.28*</td>
</tr>
<tr>
<td>Failure exp.</td>
<td>1.83 (0.50)$^a$</td>
<td>2.06 (0.45)$^b$</td>
<td>2.15 (0.43)$^c$</td>
<td>2.12 (0.58)$^{ab}$</td>
<td>2.86 (0.74)$^d$</td>
<td>45.59*</td>
</tr>
<tr>
<td>Psychop. traits</td>
<td>1.74 (0.43)$^a$</td>
<td>1.88 (0.43)$^b$</td>
<td>1.8 (0.49)$^c$</td>
<td>2.22 (0.77)$^d$</td>
<td>3.12 (0.85)$^e$</td>
<td>70.75*</td>
</tr>
<tr>
<td>Depression</td>
<td>1.44 (0.46)$^a$</td>
<td>1.66 (0.50)$^b$</td>
<td>1.65 (0.54)$^c$</td>
<td>1.82 (0.67)$^d$</td>
<td>1.69 (0.82)$^e$</td>
<td>12.85*</td>
</tr>
<tr>
<td>Anxiety</td>
<td>1.30 (0.49)$^a$</td>
<td>1.46 (0.56)$^b$</td>
<td>1.44 (0.57)$^c$</td>
<td>1.56 (0.66)$^d$</td>
<td>1.47 (0.78)$^e$</td>
<td>5.87*</td>
</tr>
<tr>
<td>Anger</td>
<td>1.46 (0.53)$^a$</td>
<td>1.59 (0.54)$^b$</td>
<td>1.6 (0.63)$^c$</td>
<td>1.75 (0.69)$^d$</td>
<td>1.82 (0.91)$^e$</td>
<td>5.92*</td>
</tr>
<tr>
<td>Friendship</td>
<td>4.17 (0.55)$^a$</td>
<td>3.95 (0.55)$^b$</td>
<td>3.78 (0.62)$^c$</td>
<td>4.01 (0.51)$^{ab}$</td>
<td>3.43 (0.75)$^d$</td>
<td>26.00*</td>
</tr>
<tr>
<td>Classr. climate</td>
<td>3.98 (0.74)$^a$</td>
<td>3.74 (0.75)$^b$</td>
<td>3.78 (0.91)$^c$</td>
<td>3.76 (0.93)$^d$</td>
<td>3.94 (1.13)$^e$</td>
<td>4.84*</td>
</tr>
</tbody>
</table>

* = $p < .001
Looking at negative emotion variables, the tolerant cluster and the intolerant/violent cluster tend to score significantly lower on anger, anxiety and depression, than the other clusters. Results for social variables indicates that the tolerant subgroup has a significantly better friendship quality than cluster 2, 3, and 5, whereas cluster with average tolerance, violent or not, have a significantly higher friendship quality than the intolerant/violent cluster.

Overall, girls belonging to the tolerant cluster report a higher self-esteem, hold lower expectations of failure and score low on impulsivity as well as psychopathic traits. They also report a high friendship quality. Being a member of the victim cluster seems to be associated with higher levels of anger, anxiety and depression. Post hoc procedures for boys, revealed, as for girls, that being a member of the intolerant/violent cluster is associated with higher levels of impulsivity, psychopathic traits and failure expectations. Boys in the cluster categorized as tolerant tend to have a higher self-esteem and better relationship with their friends, compared to others.

Research question 4: Are there predictor variables for different subgroups of tolerance?

Due to the small sample size of girls in sub-groups “Average tolerance, victim” and “Intolerant, violent” as well as the small sample size of boys in “Average tolerance, violent” and “Intolerant, violent” during all time points, the five subgroups for both genders at T3 were collapsed into three for the multiple regression analysis in research question four. These new clusters were named “Tolerant”, “Intolerant” and “Intolerant, Violent”.

When examining possible predictors for girls, presented in table 4, a higher level of anger significantly predicts membership of the intolerant cluster compared to the tolerant cluster. Also, a lower self-esteem as well as depressive symptoms at T1 significantly predicts membership in the intolerant cluster at T3. Girls who report a high level of impulsivity are significantly more likely to be a member of the intolerant/violent cluster at T3, compared to the tolerant cluster. Worth noting is the large range in the confidence interval, indicating a
heterogeneous group. This could mean that for some girls, impulsivity is a strong predictor, while for others it is not. Good self-rated classroom climate significantly predicts being a member of the intolerant/violent cluster two years later.

Table 4

*Predictor variables for cluster membership two years later for girls.*

<table>
<thead>
<tr>
<th>Predictor variables for cluster membership two years later for girls.</th>
<th>Beta (SE)</th>
<th>Lower</th>
<th>Odds Ratio</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intolerant vs Tolerant</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>1.19 (2.04)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Psychological factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impulsivity</td>
<td>0.34 (0.28)</td>
<td>0.82</td>
<td>1.41</td>
<td>2.42</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>-0.92 (0.31)**</td>
<td>0.22</td>
<td>0.40</td>
<td>0.74</td>
</tr>
<tr>
<td>Failure expectation</td>
<td>-0.53 (0.27)</td>
<td>0.35</td>
<td>0.59</td>
<td>1.01</td>
</tr>
<tr>
<td>Psychopathic traits</td>
<td>0.46 (0.30)</td>
<td>0.87</td>
<td>1.58</td>
<td>2.85</td>
</tr>
<tr>
<td><strong>Negative emotions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>-0.76 (0.32)*</td>
<td>0.25</td>
<td>0.47</td>
<td>0.87</td>
</tr>
<tr>
<td>Anxiety</td>
<td>0.03 (0.26)</td>
<td>0.63</td>
<td>1.03</td>
<td>1.71</td>
</tr>
<tr>
<td>Anger</td>
<td>0.51 (0.22)*</td>
<td>1.08</td>
<td>1.66</td>
<td>2.57</td>
</tr>
<tr>
<td><strong>Social factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friendship quality</td>
<td>-0.08 (0.27)</td>
<td>0.55</td>
<td>0.92</td>
<td>1.54</td>
</tr>
<tr>
<td>Classroom climate</td>
<td>-0.09 (0.16)</td>
<td>0.67</td>
<td>0.91</td>
<td>1.25</td>
</tr>
<tr>
<td><strong>Intolerant, violent vs Tolerant</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>-9.80 (3.82)*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Psychological factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impulsivity</td>
<td>1.17 (0.42)**</td>
<td>1.40</td>
<td>3.21</td>
<td>7.37</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>-0.11 (0.54)</td>
<td>0.31</td>
<td>0.90</td>
<td>2.59</td>
</tr>
<tr>
<td>Failure expectation</td>
<td>-0.06 (0.46)</td>
<td>0.39</td>
<td>0.95</td>
<td>2.31</td>
</tr>
<tr>
<td>Psychopathic traits</td>
<td>0.40 (0.46)</td>
<td>0.61</td>
<td>1.50</td>
<td>3.69</td>
</tr>
<tr>
<td><strong>Negative emotions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>0.24 (0.52)</td>
<td>0.46</td>
<td>1.27</td>
<td>3.50</td>
</tr>
<tr>
<td>Anxiety</td>
<td>0.04 (0.43)</td>
<td>0.45</td>
<td>1.04</td>
<td>2.42</td>
</tr>
<tr>
<td>Anger</td>
<td>-0.51 (0.41)</td>
<td>0.27</td>
<td>0.60</td>
<td>1.33</td>
</tr>
<tr>
<td><strong>Social factors</strong></td>
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<tr>
<td>Friendship quality</td>
<td>0.36 (0.49)</td>
<td>0.55</td>
<td>1.43</td>
<td>3.73</td>
</tr>
<tr>
<td>Classroom climate</td>
<td>0.61 (0.31)*</td>
<td>1.01</td>
<td>1.84</td>
<td>3.37</td>
</tr>
</tbody>
</table>

Note: $R^2 = .04$ (Cox & Snell), .08 (Nagelkerke). Model $\chi^2 (1720) = 1745.93$. * p < .05, ** p < .01.

Table 5 displays the results for boys, where only a lower self-esteem reached significance as a predictor of belonging to an intolerant/violent cluster at T3, indicating that a lower self-esteem increases the likelihood of membership in cluster 3. Other psychosocial variables at T1 were not significant as predictors two years later.
Table 5

*Predictor variables for cluster membership two years later for boys.*

<table>
<thead>
<tr>
<th>Intolerant vs Tolerant</th>
<th>Beta (SE)</th>
<th>Lower</th>
<th>Odds Ratio</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.16 (1.34)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Psychological factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impulsivity</td>
<td>0.01 (0.21)</td>
<td>0.67</td>
<td>1.01</td>
<td>1.53</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>-0.28 (0.22)</td>
<td>0.49</td>
<td>0.76</td>
<td>1.17</td>
</tr>
<tr>
<td>Failure expectation</td>
<td>0.24 (0.21)</td>
<td>0.84</td>
<td>1.27</td>
<td>1.92</td>
</tr>
<tr>
<td>Psychopathic traits</td>
<td>0.22 (0.19)</td>
<td>0.86</td>
<td>1.25</td>
<td>1.81</td>
</tr>
<tr>
<td><strong>Negative emotions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>-0.16 (0.27)</td>
<td>0.50</td>
<td>0.85</td>
<td>1.45</td>
</tr>
<tr>
<td>Anxiety</td>
<td>0.28 (0.20)</td>
<td>0.89</td>
<td>1.33</td>
<td>1.97</td>
</tr>
<tr>
<td>Anger</td>
<td>-0.20 (0.19)</td>
<td>0.57</td>
<td>0.82</td>
<td>1.20</td>
</tr>
<tr>
<td><strong>Social factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friendship quality</td>
<td>-0.29 (0.16)</td>
<td>0.54</td>
<td>0.75</td>
<td>1.03</td>
</tr>
<tr>
<td>Classroom climate</td>
<td>-0.15 (0.12)</td>
<td>0.68</td>
<td>0.87</td>
<td>1.09</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intolerant, violent vs Tolerant</th>
<th>Beta (SE)</th>
<th>Lower</th>
<th>Odds Ratio</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-2.29 (1.88)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Psychological factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impulsivity</td>
<td>0.41 (0.28)</td>
<td>0.86</td>
<td>1.50</td>
<td>2.61</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>-0.79 (0.30)*</td>
<td>0.25</td>
<td>0.45</td>
<td>0.82</td>
</tr>
<tr>
<td>Failure expectation</td>
<td>0.18 (0.28)</td>
<td>0.69</td>
<td>1.20</td>
<td>2.09</td>
</tr>
<tr>
<td>Psychopathic traits</td>
<td>0.20 (0.25)</td>
<td>0.74</td>
<td>1.22</td>
<td>2.00</td>
</tr>
<tr>
<td><strong>Negative emotions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>-0.045 (0.36)</td>
<td>0.47</td>
<td>0.96</td>
<td>1.94</td>
</tr>
<tr>
<td>Anxiety</td>
<td>-0.49 (0.30)</td>
<td>0.34</td>
<td>0.61</td>
<td>1.09</td>
</tr>
<tr>
<td>Anger</td>
<td>0.27 (0.23)</td>
<td>0.84</td>
<td>1.32</td>
<td>2.06</td>
</tr>
<tr>
<td><strong>Social factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friendship quality</td>
<td>0.07 (0.23)</td>
<td>0.69</td>
<td>1.08</td>
<td>1.69</td>
</tr>
<tr>
<td>Classroom climate</td>
<td>0.23 (0.18)</td>
<td>0.90</td>
<td>1.26</td>
<td>1.78</td>
</tr>
</tbody>
</table>

Note: \( R^2 = .05 \) (Cox & Snell), .07 (Nagelkerke). Model \( \chi^2 \) (1978) = 2007.10. * \( p < .01 \).

Summarizing, few variables proved to be significant predictors for cluster membership two years later. Different factors seem to act as predictors for boys and girls. Girls with high level of anger, low self-esteem and lower levels of depressive symptoms tend to be members of the intolerant cluster two years later, while none of the psychosocial variables could predict membership of the intolerant group for boys. Low self-esteem proved to be a predictor of belonging to the intolerant/violent cluster two years later for boys, while high levels of
impulsivity and good classroom climate at T1 predicted the membership of the intolerant/violent group for girls.

Discussion

Immigration has become an everyday part of life in Sweden, as have both tolerant and intolerant attitudes and behaviors (SOU2012:74; Malmusi, 2015). There is still little research to be found regarding various developmental trajectories and predictors in the development of tolerance, most likely resulting from a lack of longitudinal studies within the field. By studying tolerance from not only a social perspective, but also psychological perspective, we hoped to learn more about factors involved in the development of tolerance and intolerance.

Tolerance in Swedish adolescents and subgroups

To better understand tolerance in Swedish adolescents we set out to investigate levels of tolerance and intolerant behaviors within individuals, for boys and girls separately, instead of on a general group level. At all measurements, the very large majority of Swedish boys and girls were tolerant and did not engage in any violent behavior. A minority of the adolescents were intolerant, and another, even smaller minority, were violent. Tolerance also steadily increased for both genders throughout the three annual measurements. Although these findings do not refute the notion of increasingly intolerant attitudes within society, the data speaks clearly about how only a small group of adolescents harbor intolerant attitudes, and how an even smaller group of adolescents partake in intolerant behavior. Much in concord with previous research, tolerant attitudes seem to steadily increase during early adolescence (Miklikowska, 2016). As discussed previously within the field, it is probable that this increase is in part due to increased contact with outgroups (Pettigrew, 2000), but also due to cognitive maturation factors. However, in this study, we have not focused on data that may directly investigate these hypotheses.
The exception to a steady increase of tolerance within this sample is how there is a rise in the number of participants within the intolerant group and a decrease in the tolerant group for both boys and girls during 2015. It is possible that this temporary movement between clusters in part is due to contextual global events, for example the increase in terrorist attacks in several major European cities and the introduction and election of several new political parties with anti-immigration agendas. As the shift between groups in large revert the year after again, this strengthen the possibility of a temporary contextual impact.

We used clustering methods to discover subgroups of adolescents based on tolerance and intolerant behavior. This has, to our knowledge, not been done before and proved to be a functional way of identifying important differences between the adolescents. For example, by showing us that the majority of intolerant adolescents aren’t violent. Clustering on these variables do show indications of being better suited for the group of boys and less suited for the group of girls. For girls, violent behaviors turned out to be relatively rare, and this makes for very small subgroups with tolerant/intolerant and violent behaviors. It is possible that girls employ other, non-violent, forms of discriminative behavior not captured by the self-report scale and hence our clusters (Kerr et al., 2007).

One unexpected finding that especially stands out in the search for subgroups, is the small group, exclusive to girls, who are neither intolerant nor perpetrators of violence, but victims of violent behavior. More information about this group emerged as characteristics of the adolescents in it were discovered through other psychosocial variables; this is discussed further down below.

*The development of tolerant attitudes*

In this study we aimed to investigate how tolerance develops over time during adolescence. To our knowledge, this is the first time clusters based on tolerant attitudes and intolerant behavior is studied longitudinally in an adolescent population. Looking at previous research
where clustering was not used, tolerance was likely to become more stable on group level with increasing age (Lundberg & Abdelzadeh, 2016). Our findings show that no matter the degree of tolerance, gender and whether violent behavior is present or not, adolescents are likely to remain the same when it comes to tolerant attitudes and intolerant behavior over a two-year period, from age 13 or 14 to age 15 or 16.

There are several possible explanations for this stability. Social influence and group norms increase the likelihood of conforming to either tolerant or intolerant attitudes, especially if there are impactful persons involved in such group, i.e. friends, family or significant others (Hogg & Vaughan, 2011). If an adolescent identifies strongly with their group, they are likely to hold on to attitudes similar of that group. Thus, in order to investigate this hypothesis further, we would need to know more about how tolerant peers and family members are, and whether their attitudes are associated with the adolescents’ tolerance. This could prove an important target for future research.

Our results showed that boys who report intolerant attitudes and violent behavior tend to become more tolerant and less violent over time. This may be due to cognitive maturation and increased ability in abstract reasoning, but could also be explained by the effect of regression towards the population mean (Hogg & Vaughan, 2011). If the case of regression to the population mean were a likely explanation, we ought to see similar tendencies in the tolerant group. However, this is not observed in our study, rather the tolerant adolescents tend to become more tolerant. Therefore, it is likely that this result indicates change towards more tolerant attitudes for boys over time.

Our results also show that adolescents, who are intolerant, are likely to become violent over time. This is a potential risk, but also signals a possibility, as it offers a potential time frame where interventions may be implemented. Developing violent behavior could be explained by the social identity theory, where negative attitudes or intolerance could drive
avoidance or, as in this case, engagement in violent behavior towards other groups. Still, only a minority of adolescents who hold intolerant attitudes will engage in violent behavior, why this is can hopefully be explained better by future research on psychological factors. Future research could also investigate intolerant behaviors other than street violence, e.g. psychological bullying, or in a school context.

Psychosocial factors related to the subgroups

When trying to further the understanding of adolescents in the different clusters, we looked at the association between cluster membership and a number of psychosocial factors. Although there are some small variations between the genders in levels of psychosocial factors correlating with tolerance and intolerant behavior, trends are for the most similar between the genders.

There seem to be several positive aspects of belonging to the cluster that is the most tolerant, regardless of gender. Adolescents with high tolerance report higher scores on self-esteem as well as lower scores on failure expectations compared to adolescents who are more average or low tolerance. This indicates that tolerant attitudes are associated with more positive self-evaluation and emotion states. The more positive adolescents evaluate themselves, the more positive they evaluate others.

Looking at negative emotion variables, girls and boys in the tolerant cluster also tend to score significantly lower on anger, anxiety and depression than adolescents in other clusters. This could possibly be understood through tolerant attitudes in nature being associated with feelings of compassion and social inclusion, while intolerant attitudes often are associated with fear of-, skepticism towards-, or exclusion of others (The Living History Forum, 2010). Harboring intolerant attitudes could as such possibly be more straining mentally as it involves being “guarded” towards perceived threats. This would explain the association between negative emotion and belonging to the intolerant cluster.
Friendship quality is another social factor that was associated with tolerance in adolescents. However, we did not run specific analyses on whether friendships of the adolescents are ingroup or outgroup, something that could have provided further information regarding the relevance of the contact hypothesis. It is possible that intolerant adolescents do not have outgroup friends to the same extent and that such friendships could prove related to higher perceived friendship quality.

Two clusters stand out above the others as experiencing good classroom climate: the tolerant cluster and the intolerant/violent cluster. This finding is partly surprising. It is hard to explain this finding from previous research, which suggests that a good school environment is associated with positive attitudes (Bayram Özdemir & Stattin, 2014). One could speculate that experiencing positive classroom climate in part is dependent on whether one is able to voice and be accepted for one’s opinions, regardless of type of attitude. If such a theory holds true, tolerant adolescents could then paradoxically play part in the intolerant/violent group’s high score on classroom climate as these still experience acceptance from the tolerant majority.

While the tolerant group is the group associated with several positive effects, girls and boys who are both intolerant and violent, surprisingly display some positive associations. These individuals report very high self-esteem and low level of negative emotion. As they in combination report the highest levels of failure expectations and psychopathic traits, it could be that this group's positive self-evaluation might represent something different completely. It could also be that this group simply does not reflect regarding consequences of their attitudes and behavior in the same way as other adolescents and hence aren’t bothered by it either (Barlow & Durand, 2012).

Both boys and girls in the two subgroups reporting some form of violent behavior have significantly higher scores on impulsivity and psychopathic traits compared to the more tolerant subgroups. These findings could be explained by the association between violent
behavior, impulsivity and psychopathic traits. Future research would preferably run separate analyses on violent behavior in combination with impulsivity and psychopathic traits to examine the impact of these on tolerance only.

The cluster with girls described as having average tolerance and being victims of violence are markedly different from the other clusters on the psychosocial factors. Their answers indicate very poor well-being and a significantly higher degree of negative emotions. As the adolescents in this cluster also move to other clusters at T3, it is possible that this group could also be described, and perhaps better understood, as an existing - or risk group for mental illness.

*Predictors of tolerant attitudes and intolerant behavior*

This study was conducted to extend knowledge on what factors that can predict tolerant attitudes and intolerant behavior in adolescents. To our knowledge, emotional factors such as anger and anxiety has not been investigated in this context before. Girls who experience high levels of anger and low self-esteem are at risk of holding intolerant attitudes two years later. A theoretical explanation may be offered by the social identity theory and the contact hypothesis (Bayram Özdemir, Özdemir & Stattin, 2016; Côté & Erickson, 2009). Both anger and low levels of self-esteem are components not often associated with initiating or maintaining contact with others. As such, adolescents already intolerant may be even less prone to intergroup contact. Girls who are angry might experience threat perceived from outgroup members more strongly, which may lead to these girls perceiving others as the reason for their anger and/or low self-esteem. Boys who report low self-esteem are also more likely to belong to the intolerant and violent group at T3, supporting the hypothesis that low self-esteem is associated with intolerance.

More information about the adolescents’ peers might contribute to further understanding. For example, more information on whether friends are considered intolerant
and whether intergroup contact was characterized by positive or negative circumstances could further our understanding.

Emotion and mood has been shown to influence both thought as well as action (Hogg & Vaughan, 2011). From this point of view, an angry adolescent is more likely to belong to a group consisting of intolerant individuals. Negative emotions, such as anger, affect people to more easily make negative evaluations of outgroups, and therefore strengthen negative stereotypes (i.e. prejudice). It is however possible that anger is better understood in the context of prejudice rather than tolerance. Combined with impulsivity, anger has been shown to predict membership of the intolerant and violent cluster, offering a possible important finding in understanding the development of intolerant behavior.

To our surprise, girls who think their classroom climate is good are likely to be intolerant and engage in violent behavior two years later. It is difficult to offer a possible explanation for good classroom climate being one of the predictors for intolerance. As previously discussed a possible explanation could be that this may be a side effect of a tolerant majority within the classroom; all people deserve to be heard, regardless of underlying attitudes. There may also be third variables involved in these processes that we simply have not included, such as SES, school characteristics, and teaching style.

There are practical implications from the findings of this study. Adolescence is a period where tolerant attitudes are still forming. At the same time, stability within different subgroups of tolerant attitudes and intolerant behaviors seem to be the most common developmental trajectory. There are indications that some psychosocial factors act as predictors over a two-year period, especially for girls, but these findings need to be replicated and investigated further.

Professionals within areas such as schooling or youth mental health, should acknowledge these findings, but also remain aware that currently available interventions
aiming to increase tolerance and counteract xenophobia do not seem to be effective enough. Changing tolerant attitudes and intolerant behaviors do seem possible, but too little is still known to design and implement effective and suitable prevention or intervention programs. In the meantime, professionals may want to have in mind that intolerant attitudes and behaviors not only lead to negative consequences for the victim and society, but seemingly also for the individuals holding these attitudes.

**Strengths and limitations**

A psychosocial approach where emotional variables are investigated is considered a strength, as it has not previously been included in a study. In this sample one of the emotional variables, anger, proved to be a predictor for adolescents holding intolerant attitudes and engaging in violent behavior. The scale measuring tolerance is located at the end of one part, and since the first part administered is randomized the dependent variable is measured either at the middle or at the end of measurement. On one hand, a broad questionnaire with many questions could be a possible limitation as it may cause participants to give less reliable answers, while on the other hand it is a strength being able to cover broad ranges of factors.

The constructs were measured using multiple questions and scales showing acceptable to excellent reliability. In this sample though, the questionnaire measuring tolerance (TPS) tended to produce a ceiling effect and therefore may limit the amount of change shown (Kazdin, 2013). Moreover, self-reports answers have no way to identify answers based on social desirability and it is therefore possible that adolescents’ tolerance scores are biased since the social norm generally promotes high tolerance in favor of intolerance (Kazdin, 2013). One possible consequence of this would be that adolescents report overly tolerant attitudes. This does however seem unlikely as a sizeable part of the sample still reported significant intolerant attitudes. The ceiling effect might be a result of social desirability and
one way of overcoming these effects could be through measuring implicit attitudes and/or a related construct, such as prejudice.

Furthermore, the strengths and limitations of data imputation is not fully understood yet, with different groups of scientist disagreeing heavily on the matter. It is our belief that data imputation in our case was sound, as it enabled group wise analyses with otherwise small groups in the violent clusters. As we also ran several analyses on a preliminary dataset without any imputed data and found similar results, it seems that the data imputation served the function of increasing power in the study, but not altering results.

Due to small sample sizes in the clusters with adolescents who partake in violent behavior, we may lack statistical power to find statistically significant results for these groups. To get around the problem of few participants and low statistical power in these groups, one would have to either identify and select participants who partake in violent behavior, or recruit a larger number of participants in total. Both these provide their own limitations and hardships as you either have to compromise in the selection process or face research issues related to magnitude.

Due to the large sample, we decided to perform a cluster analysis using both hierarchical classification and K-means. Clustering could be a strength when categorizing, since it is done empirical, but at the same time always lead to groupings regardless of actual differences. Combining hierarchical clustering, a more conservative method, and K-means, a more liberal method, combats this and could hence be considered a strength (Bergman, Magnusson & El-Khour, 2003).

In the reflection of our results, dividing the participants by stated gender is considered a strength as differences and similarities for subgroups, developmental trajectories as well as predictors could be studied. However, by dividing by gender, we had to exclude about 20 participants who changed their gender-identification between measurements for unknown
reasons. The study may also have indirectly forced others into a binary choosing of gender, which is questionable both ethically and methodically.

The longitudinal design in this study is a particular strength when investigating the developmental aspects of tolerance and whether there are certain predictors (Kazdin, 2013). Although the sample size in the clusters engaging in violent behavior was small, the total sample was large and the participation rate was high, making the results more likely to reflect the general population. It is regarded a major strength that all public schools in the county were included, making it more likely to receive data from adolescents from a wide range of backgrounds. Thus, it is likely that the external validity is satisfying considering middle sized municipalities in Sweden.

Our results may not be generalizable to other municipalities and time points. For example, the sample represents the population in middle sized and small municipalities. Hence, the findings may not be generalizable to larger communities or cities, neither in Sweden nor abroad.

Tolerance and intolerance are somewhat restricted concepts with many similar and closely associated concepts such as prejudice and xenophobia were not measured. Prejudicial attitudes were excluded from the analysis due to reliability issues with the questionnaire used in the measurement. The study would have been strengthened by also having included these concepts. It is likely that there is some overlap between these concepts, and as such it is possible that our results not necessarily capture tolerant attitudes per se. By, for example, having both tolerance and prejudice data, comparisons between these variables on other psychosocial factors could possibly have provided important data.

Previous research show that tolerance might differ depending on the group which the tolerant attitude is directed towards (The Living History Forum, 2010; The Living History Forum, 2014). The questionnaire used to measure tolerance in this study measures general
tolerance and make no distinction between, for example, different ethnic or religious groups. It is therefore hard to conclude that adolescents hold specifically tolerant or intolerant beliefs towards any certain group of people. It is also possible that belonging to certain groups may influence tolerance and intolerance towards other specific groups; we lacked data to answer these types of questions. To investigate differences and similarities in tolerance within individuals, future research could expand by instead forming the questions as tolerance towards specific groups.

Despite seemingly shifting opinions within both politics and society, tolerance among the large majority of adolescents remain high. There are, however, subgroups at risk of developing intolerant attitudes and behaviors. It is important to identify these individuals, to enable the creation of effective interventions targeting this group. Findings indicate that such interventions are possible, and that adolescence may be the window of opportunity.

Conclusion

Our findings indicate that the large majority of Swedish adolescents are tolerant. Besides holding highly tolerant attitudes, our results suggest that tolerance also increase during adolescence. There are clear subgroups of tolerance when viewed in the light of intolerant behaviors such as violence. Although these intolerant and violent groups are small, there are clear implications that individuals - already in - or moving to these groups warrant further research and are targets suited for intervention.

Stability within subgroups seems to be the most common trajectory over our three annual measurements. There are some typical trajectories of change between subgroups, one of which is intolerant adolescents developing intolerant behaviors, i.e. violence.

Several psychosocial factors are associated with the different subgroups of tolerance. The largest subgroup containing tolerant adolescents report high friendship quality, classroom climate and self-esteem as well as a low degree of negative emotions, impulsivity and other
traits considered problematic. The intolerant and intolerant violent groups on the other hand report scores on these factors that speak of more troubled individuals, something that is discussed as being a consequence of perceiving threat from an outgroup.

Few of the psychosocial factors included in this study proved to act as predictors for subgroup membership two years later, especially for boys.

Summarizing, the relationship between tolerant attitudes, intolerant behavior and psychosocial variables seem to be complex with a wide range of factors being impactful. Further research is needed in order to clarify the mechanisms of tolerance and intolerant behavior during adolescence.

Acknowledgments

This study was made possible by access to data from the Three City Study, a longitudinal research program at the department of Law, Psychology and Social work at Örebro University, Sweden. The research program was supported by a grant from Formas. We thank Professor Lauree Tilton-Weaver for providing help with data imputation.

References


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## Appendix 1

### Tolerance and prejudice scales (TPS)

<table>
<thead>
<tr>
<th>Tolerance subscale</th>
<th>English</th>
<th>Response</th>
<th>Svenska</th>
<th>Svarsalternativ</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong></td>
<td>I accept and think that I am openminded to others who are very different from me</td>
<td>1) Completely disagree</td>
<td>Jag accepterar och tycker jag är öppen mot andra som är väldigt annorlunda än mig</td>
<td>1) Stämmer inte alls</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Mostly disagree</td>
<td></td>
<td>2) Stämmer inte så bra</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3) Slightly disagree</td>
<td></td>
<td>3) Stämmer så dår</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4) Mostly agree</td>
<td></td>
<td>4) Stämmer ganska bra</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5) Completely agree</td>
<td></td>
<td>5) Stämmer precis</td>
</tr>
<tr>
<td><strong>2</strong></td>
<td>I feel comfortable talking to others in my age who have opinions which are very different from my opinions</td>
<td>1) Completely disagree</td>
<td>Jag känner mig bekvämt med att prata med andra i min ålder som har åsikter som är väldigt annorlunda från mina åsikter</td>
<td>1) Stämmer inte alls</td>
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<td></td>
<td></td>
<td>2) Mostly disagree</td>
<td></td>
<td>2) Stämmer inte så bra</td>
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<td></td>
<td>5) Completely agree</td>
<td></td>
<td>5) Stämmer precis</td>
</tr>
<tr>
<td><strong>3</strong></td>
<td>I am openminded towards others who have different ways of doing things</td>
<td>1) Completely disagree</td>
<td>Jag är öppen mot andra som har olika sätt att göra saker och ting</td>
<td>1) Stämmer inte alls</td>
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<td>5) Stämmer precis</td>
</tr>
<tr>
<td><strong>4</strong></td>
<td>I treat everyone equal, even if they are very different from me</td>
<td>1) Completely disagree</td>
<td>Jag behandlar alla lika, även om de skiljer sig mycket från mig</td>
<td>1) Stämmer inte alls</td>
</tr>
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<td></td>
<td></td>
<td>2) Mostly disagree</td>
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<td>5) Stämmer precis</td>
</tr>
<tr>
<td><strong>5</strong></td>
<td>Adolescents who are different from me should not have the same rights as I have</td>
<td>1) Completely disagree</td>
<td>Ungdomar som är annorlunda från mig ska inte ha samma rättigheter som jag har</td>
<td>1) Stämmer inte alls</td>
</tr>
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</tbody>
</table>

### Violence in the streets, victim and perpetrator perspective

<table>
<thead>
<tr>
<th>Victim perspective</th>
<th>English</th>
<th>Response</th>
<th>Svenska</th>
<th>Svarsalternativ</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong></td>
<td>Have you, for no reason, been attacked by other youths in your spare time?</td>
<td>1) No, it hasn’t happened 2-3 times</td>
<td>Har du varit med om att andra grupper av ungdomar attackerat dig utan anledning på fritiden?</td>
<td>1) Nej, det har inte hänt 2-3 gånger</td>
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<tr>
<td></td>
<td></td>
<td>2) Yes, it has happened 2-3 times</td>
<td></td>
<td>2) Ja, det har hänt 2-3 gånger</td>
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<tr>
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<td></td>
<td>4) Yes, it has happened 2-3 times</td>
<td></td>
<td>4) Ja, det har hänt 4 eller fler gånger</td>
</tr>
<tr>
<td><strong>2</strong></td>
<td>Have you, on your spare time, been threatened with weapons of any kind by other groups of youths?</td>
<td>1) No, it hasn’t happened 2-3 times</td>
<td>Har du varit med om att andra grupper av ungdomar har hotat dig med vapen av något slag på fritiden?</td>
<td>1) Nej, det har inte hänt 2-3 gånger</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Yes, it has happened 2-3 times</td>
<td></td>
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<td>4) Yes, it has happened 2-3 times</td>
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</tr>
<tr>
<td><strong>3</strong></td>
<td>Have you experienced that one or more groups of youth have kicked you while you were lying on the ground, or that they have kicked on your head?</td>
<td>1) No, it hasn’t happened 2-3 times</td>
<td>Har du varit med om att någon eller några grupper av ungdomar sparkat dig när du legat på marken eller att de har sparkat mot ditt huvud?</td>
<td>1) Nej, det har inte hänt 2-3 gånger</td>
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<td>2) Yes, it has happened 2-3 times</td>
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<td>4) Yes, it has happened 2-3 times</td>
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<td>4) Ja, det har hänt 4 eller fler gånger</td>
</tr>
</tbody>
</table>
|   | Have you been threatened or forced to give up money, a cell phone, cigarettes or anything else by other groups of youth? | 1) No, it hasn’t happened  
2) Yes, it has happened once  
3) Yes, it has happened 2-3 times  
4) Yes, it has happened 4 or more times | Har du blivit hotad eller tvingad att lämna ifrån dig pengar, mobiltelefon, cigaretter, eller något annat av andra grupper av ungdomar? | 1) Nej, det har inte hänt  
2) Ja, det har hänt 1 gång  
3) Ja, det har hänt 2-3 gånger  
4) Ja, det har hänt 4 eller fler gånger |
|---|---|---|---|---|
| 1 | Have you taken part in attacking others without them having threatened or attacked you or your friends’ first? | 1) No, it hasn’t happened  
2) Yes, it has happened once  
3) Yes, it has happened 2-3 times  
4) Yes, it has happened 4 or more times | Har du själv varit med om att angripa andra utan att de först har hotat eller angripit dig eller dina kompisar? | 1) Nej, det har inte hänt  
2) Ja, det har hänt 1 gång  
3) Ja, det har hänt 2-3 gånger  
4) Ja, det har hänt 4 eller fler gånger |
| 2 | Have you carried any weapon when you have been out at your spare time (even as self-defense)? | 1) No, it hasn’t happened  
2) Yes, it has happened once  
3) Yes, it has happened 2-3 times  
4) Yes, it has happened 4 or more times | Har du själv haft vapen på dig på fritiden (även som självförsvar)? | 1) Nej, det har inte hänt  
2) Ja, det har hänt 1 gång  
3) Ja, det har hänt 2-3 gånger  
4) Ja, det har hänt 4 eller fler gånger |
| 3 | Have you taken part in kicking someone who was lying down or kicking someone in the head? | 1) No, it hasn’t happened  
2) Yes, it has happened once  
3) Yes, it has happened 2-3 times  
4) Yes, it has happened 4 or more times | Har du själv varit med och sparkat någon som ligger eller har du sparkat mot någons huvud? | 1) Nej, det har inte hänt  
2) Ja, det har hänt 1 gång  
3) Ja, det har hänt 2-3 gånger  
4) Ja, det har hänt 4 eller fler gånger |
| 4 | Have you taken part in threatening or forcing anyone to give you money, a cell phone, cigarettes or anything else? | 1) No, it hasn’t happened  
2) Yes, it has happened once  
3) Yes, it has happened 2-3 times  
4) Yes, it has happened 4 or more times | Har du själv varit med om att hota eller tvinga någon att ge dig pengar, mobiltelefon, cigaretter, eller något annat? | 1) Nej, det har inte hänt  
2) Ja, det har hänt 1 gång  
3) Ja, det har hänt 2-3 gånger  
4) Ja, det har hänt 4 eller fler gånger |